IN THE CLAIMS:

1.-2. (canceled)

3. (previously presented) A method for one of delivering and withholding delivery of an extra-systolic stimulation cardiac pacing therapy, comprising:

sensing electrical activity of a heart to provide a heart rate signal for said heart;

correlating the heart rate signal and an extra-systolic interval for an extra-systolic stimulation therapy to a data set having at least a plurality of heart rates and a plurality of extra-systolic intervals; and

based on the correlation either delivering or inhibiting delivery of the extra-systolic stimulation therapy,

wherein the data set includes empiric heart rate-based guidance for refractory period changes of a chamber of the heart for a plurality of heart rates, and evoked response information, and wherein said information is derived from measurements of an evoked response from the extra-systolic stimulation therapy, said information establishing, for at least one cardiac cycle, a refractory period of the chamber of the heart.

4. (original) A method according to claim 3, wherein said information comprises at least one of: an evoked R-wave response, an evoked R-wave timing parameter, an evoked R-wave morphology characteristic, an evoked P-wave response, an evoked P-wave timing parameter, an evoked P-wave morphology characteristic, an evoked T-wave response, an evoked T-wave timing parameter, an evoked T-wave morphology characteristic, a ventricular pressure signal, an atrial pressure signal, a change of magnitude of a maximum derivative of the ventricular pressure signal, a change of magnitude of a maximum derivative of the atrial pressure signal.

5. (previously presented) A method according to claim 3, wherein at least some of said plurality of correlated heart rates and extra-systolic intervals incorporate reduced extra-systolic intervals for a set of relatively higher heart rates.

6. (previously presented) A method according to claim 3, wherein at least some of said plurality of correlated heart rates and extra-systolic intervals incorporate increased extra-systolic intervals for a set of relatively lower heart rates.

7. (original) A method according to claim 5, wherein said correlated heart rates and extra-systolic intervals incorporate a security-timing margin for a tachycardia induction portion of the data set.

8. (currently amended) A method according to claim 3, wherein the data set~~s~~ incorporate~~s~~ information regarding a predicted degree or a measured degree of a stroke volume augmentation resulting from at least some discrete combinations of the ~~correlated~~ data set~~s~~.

9. (currently amended) A method according to claim 3, wherein ~~at least some of~~ the ~~correlated~~ data set~~s~~ incorporate~~s~~ information regarding enhanced arrhythmia detection.

10. (currently amended) A method according to claim 9, wherein ~~for at least some of~~ the ~~correlated~~ data set~~s that~~ include~~s~~ potential for a masked tachycardia rhythm, and further comprising:

periodically withholding delivery of the extra-systolic stimulation therapy or decreasing the extra-systolic interval.

11. (original) A method according to claim 9, further comprising: intermittently withholding delivery of the extra-systolic stimulation therapy for at least one cardiac cycle for every N cardiac cycles to expose a masked tachycardia rhythms, wherein N comprises a non-zero integer.

12. (original) A method according to claim 9, wherein the information regarding enhanced arrhythmia detection includes a reduced electrogram blanking period following delivery of a cardiac pacing stimulation pulse or an extra-systolic stimulation pulse.

13. (original) A method according to claim 12, wherein the reduced electrogram blanking period includes a cross-chamber blanking period and a same-chamber blanking period.

14. (previously presented) A method according to claim 12, wherein the reduced blanking extends at least one arrhythmia sensing interval for at least a portion of relatively higher heart rates mapped to a table.

15. (currently amended) A method according to claim 3, wherein ~~at least a portion of~~ the ~~correlated~~ data set~~s~~ incorporate~~s~~ information regarding a diastolic compromise condition.

16. (previously presented) A method according to claim 3, wherein for a plurality of relatively low heart rates: delivering the extra-systolic stimulation therapy for every cardiac cycle; and for a plurality of relatively high heart rates: withholding delivery of the extra-systolic stimulation therapy.

17. (currently amended) A method according to claim 16, further comprising:

applying an alternate paced heart rate during delivery of the extra-systolic stimulation therapy wherein the ~~correlated~~ data set~~s are~~ is disposed in, or proximate to, a region of a possibly masked tachycardia rhythm;

comparing the alternate paced heart rate to the correlated heart rate to determine if the alternate paced heart rate is about double or about half of the correlated~~the mapped~~ heart rate; and

in the event that the alternate paced heart rate is about double or one-half of the ~~mapped~~ correlated heart rate, withholding delivery of the extra-systolic stimulation therapy.

18. (original) A method according to claim 17, further comprising:

applying an arrhythmia detection technique; and

in the event that an arrhythmia is detected, attempting to terminate the arrhythmia.

19. (original) A method according to claim 18, wherein attempting to terminate the arrhythmia comprises at least a one of: providing an anti-tachycardia pacing therapy, providing a cardioversion therapy, providing a defibrillation therapy, providing a burst-type pacing therapy, providing a ramp-type pacing therapy.

20.-22. (canceled)

23. (previously presented) A method according to claim 25, wherein the table includes empiric heart rate-based rules for refractory period changes of a chamber of the heart for a plurality of heart rates.

24. (canceled)

25. (currently amended) A method for initiating or gradually suspending delivery of an extra-systolic stimulation cardiac pacing therapy, comprising:

sensing electrical activity of a heart to provide a heart rate signal for said heart;

correlating the heart rate signal and an extra-systolic interval for an extra-systolic stimulation therapy to a therapy initiation-and-suspension table containing at least a plurality of heart rates and a plurality of extra-systolic intervals; and

based on ~~the~~ a mapped location of the heart rate signal on the table and ~~the mapped~~ a corresponding extra-systolic interval either delivering, or inhibiting delivery of, the extra extra-systolic stimulation therapy, wherein the therapy initiation-and-suspension table includes a plurality of therapy transition rules,

wherein one therapy transition rule provides a series of relatively long extra-systolic intervals compared to a cardiac cycle interval for a short period of time following initial delivery of the extra-systolic stimulation therapy and wherein said intervals are progressively shortened as the heart rate decreases during delivery of the extra-systolic stimulation therapy, or

wherein delivery of the extra-systolic stimulation therapy may not be suspended immediately in the event that the heart rate exceeds a pre-established heart rate limit, wherein the table includes evoked response information, said information derived from measurements of an evoked response from the extra-systolic stimulation therapy, said information establishing, for at least one cardiac cycle, a refractory period of the chamber of the heart, and

wherein said information comprises at least a one of: an evoked R-wave response, an evoked R-wave timing parameter, an evoked R-wave morphology characteristic, an evoked P-wave response, an evoked P-wave timing parameter, an evoked P-wave morphology characteristic, an evoked T-wave response, an evoked T-wave timing parameter, an evoked T-wave morphology characteristic, a

ventricular pressure signal, an atrial pressure signal, a change of magnitude of a maximum derivative of the ventricular pressure signal, a change of magnitude of a maximum derivative of the atrial pressure signal.

26. (currently amended) A method according to claim 25, wherein in the event that the heart comprises a part of a chronotropically incompetent hemodynamic system ~~and further comprising:~~
reducing a rate responsiveness characteristic relative to a detected patient activity signal, so that the resulting rate response slope for a chronotropically incompetent hemodynamic system reflects a wider range of enhanced hemodynamic function over a wider range of heart rates.

27.-29. (canceled)

30. (previously presented) A computer readable medium for causing a programmable processor to perform a method of delivering or withholding delivery of an extra-systolic stimulation therapy, comprising:

instructions for sensing electrical activity of a heart to provide a heart rate signal for said heart;

instructions for mapping the heart rate signal and an extra-systolic interval for an extra-systolic stimulation therapy to a table containing at least a plurality of heart rates and a plurality of extra-systolic intervals; and

based on the location on the table of the mapped heart rate signal and the mapped extra-systolic interval either instructions for delivering, or inhibiting delivery of, the extra extra-systolic stimulation therapy,

wherein the table includes evoked response information, said information derived from measurements of an evoked response from the extra-systolic stimulation therapy, said information establishing, for at least one cardiac cycle, a refractory period of the chamber of the heart,

wherein the table includes empiric heart rate-based rules for refractory period changes of a chamber of the heart for a plurality of heart rates, and

wherein said information comprises at least a one of: an evoked R-wave response, an evoked R-wave timing parameter, an evoked R-wave morphology characteristic, an evoked P-wave response, an evoked P-wave timing parameter, an evoked P-wave morphology characteristic, an evoked T-wave response, an evoked T-wave timing parameter, an evoked T-wave morphology characteristic, a ventricular pressure signal, an atrial pressure signal, a change of magnitude of a maximum derivative of the ventricular pressure signal, a change of magnitude of a maximum derivative of the atrial pressure signal.

31. (previously presented) A medium according to claim 30, wherein at least some of said plurality of mapped heart rates and extra-systolic intervals incorporate reduced extra-systolic intervals in the event that the heart rate increases.

32. (previously presented) A medium according to claim 30, wherein at least some of said plurality of mapped heart rates and extra-systolic intervals incorporate increased extra-systolic intervals in the event that the heart rate decreases.

33. (previously presented) A medium according to claim 31, wherein said mapped heart rates and extra-systolic intervals incorporate a security-timing margin for a tachycardia induction portion of the table.

34. (previously presented) A medium according to claim 30, wherein at least a portion of the mapped location of the table incorporates information regarding a predicted degree or a measured degree of a stroke volume augmentation resulting from the extra-systolic stimulation therapy.

35. (previously presented) A medium according to claim 30, wherein at least a portion of the mapped locations of the table incorporates information regarding enhanced arrhythmia detection.

36. (currently amended) A medium according to claim 35, wherein in the event that the portion of the mapped locations of the table include potential for a masked tachycardia rhythm, ~~comprising~~ executing one of ~~either~~ instructions for periodically withholding delivery of the extra-systolic stimulation therapy ~~or~~and instructions for decreasing the extra-systolic interval.

37-38. (canceled)

39. (currently amended) A system according to claim 4139, wherein the data set includes empiric heart rate-based guidance for refractory period changes of a chamber of the heart for a plurality of heart rates.

40. (canceled)

41. (currently amended) A system for delivering or withholding delivery of an extra-systolic stimulation cardiac pacing therapy, comprising:

means for sensing electrical activity of a heart to provide a heart rate signal for said heart;

means for correlating the heart rate signal and an extra-systolic interval for an extra-systolic stimulation therapy to a data set having at least a plurality of heart rates and a plurality of extra-systolic intervals; and

~~based on the correlation either~~ means for one of delivering or inhibiting delivery of the extra extra-systolic stimulation therapy based on the correlated heart rate signal,

wherein the data set includes evoked response information, said response information derived from measurements of an evoked response from the extra-systolic stimulation therapy, said response information establishing, for at least one cardiac cycle, a refractory period of the chamber of the heart, and

wherein said response information comprises at least one of: an evoked R-wave response, an evoked R-wave timing parameter, an evoked R-wave morphology characteristic, an evoked P-wave response, an evoked P-wave timing parameter, an evoked P-wave morphology characteristic, an evoked T-wave response, an evoked T-wave timing parameter, an evoked T-wave morphology characteristic, a ventricular pressure signal, an atrial pressure signal, a change of magnitude of a maximum derivative of the ventricular pressure signal, a change of magnitude of a maximum derivative of the atrial pressure signal.

42. (currently amended) A system according to claim 41, wherein ~~at least some of~~ said ~~plurality of~~ correlated heart rate signal and said plurality of extra-systolic intervals incorporate reduced extra-systolic intervals for a set of relatively higher heart rates.

43. (currently amended) A system according to claim 41, wherein ~~at least some of~~ said ~~plurality of~~ correlated heart rate signal and said plurality of extra-systolic intervals incorporate increased extra-systolic intervals for a set of relatively lower heart rates.

44. (currently amended) A system according to claim 41, wherein said correlated heart rate signal and said plurality of extra-systolic intervals incorporate a security-timing margin for a tachycardia induction portion of the data set.

45. (currently amended) A system according to claim 41, wherein the data set~~s~~ incorporate~~s~~ information regarding one of a predicted degree ~~or~~and a measured degree of a stroke volume augmentation value~~resulting from at least some discrete combinations of the correlated data sets~~.

46. (currently amended) A system according to claim 41, wherein ~~at least some of~~ the ~~correlated~~ data set~~s~~ incorporate~~s~~ information regarding enhanced arrhythmia detection.

47. (currently amended) A system according to claim 46, wherein ~~for at least some of~~ the ~~correlated~~ data set~~s that~~ include~~s~~ potential for a masked tachycardia rhythm, and further comprising:

means for one of periodically withholding delivery of the extra-systolic stimulation therapy ~~or~~and decreasing the extra-systolic interval.

48. (previously presented) A system according to claim 46, further comprising:

means for intermittently withholding delivery of the extra-systolic stimulation therapy for at least one cardiac cycle for every N cardiac cycles to expose a masked tachycardia rhythms, wherein N comprises a non-zero integer.

49. (previously presented) A system according to claim 46, wherein the information regarding enhanced arrhythmia detection includes a reduced electrogram blanking period following delivery of a cardiac pacing stimulation pulse or an extra-systolic stimulation pulse.

50. (currently amended) A system according to claim 49, wherein the reduced electrogram blanking period includes one of a cross-chamber blanking period and a same-chamber blanking period.

51. (currently amended) A system according to claim 49, wherein the reduced electrogram blanking period extends at least one arrhythmia sensing interval for at least a portion of relatively higher heart rates ~~mapped to the table~~.

52. (currently amended) A system according to claim 41, wherein ~~at least a portion of~~ the ~~correlated~~ data set~~s~~ incorporate~~s~~ information regarding a diastolic compromise condition.

53. (previously presented) A system according to claim 41, further comprising: for a plurality of relatively low heart rates, means for delivering the extra-systolic stimulation therapy for every cardiac cycle; and for a plurality of relatively high heart rates, means for withholding delivery of the extra-systolic stimulation therapy.

54. (currently amended) A system according to claim 53, further comprising:

means for applying an alternate paced heart rate during delivery of the extra-systolic stimulation therapy wherein the ~~correlated~~ data set~~s~~ ~~are~~ is disposed in, or proximate to, a region of a possibly masked tachycardia rhythm;

means for comparing the alternate paced heart rate to the correlated heart rate signal to determine if the alternate paced heart rate is one of about double ~~or~~and about half of the ~~mapped~~ correlated heart rate; and

in the event that the alternate paced heart rate is about double or one-half of the ~~mapped~~ correlated heart rate signal, means for withholding delivery of the extra-systolic stimulation therapy.

55. (currently amended) A system according to claim 54, further comprising:

means for applying an arrhythmia detection technique; and

~~in the event that an arrhythmia is detected,~~ means for attempting to terminate an~~the~~ arrhythmia detected by the means for applying.

56. (currently amended) A system~~method~~ according to claim 55, wherein the means for attempting to terminate the arrhythmia comprises at least a one of: means for providing an anti-tachycardia pacing therapy, means for providing a cardioversion therapy, means for providing a defibrillation therapy, means for providing a burst-type pacing therapy, means for providing a ramp-type pacing therapy.